

Alexander Hoare

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Education

2016 to 2019 – University of Leeds

Undergraduate: 2:1 (67%) B.Sc. in Computer Sciences

July 2019

During my time at the University of Leeds, I worked on numerous projects including:

- **Cyber security:** Projects were developed in order to ensure software complies with basic software security standards (e.g SQL injections) as well as regular penetration testing performed on most pieces of coursework in order to ensure high quality code.
- **Networking:** Networking projects were developed in order to create from-scratch client/server models (using Java's networking API e.g sockets), and using these servers to store/hold/download images in a secure fashion.
- **Machine learning:** Machine learning was utilised numerous times throughout my final year at university, primarily using Python's tensorflow library. The library was used to test a validation and testing set to correctly identify types of shoes.
- **Mobile application development:** Mobile Application development was carried out in Kotlin using Android Studio. The project was created for use by the NHS, who would have used the application in order to correctly assign terminally ill patients to the care homes that are most suitable for them (facilities, distance to home, etc). The application including a messaging system built within the application to allow for hospitals and care homes to communicate and featured a lot of use from the Google Firebase/Firestore Mobile Application API.
- **Robotics:** A lot of time was spent helping to develop software for turtle-styled robots, creating algorithms which were able to detect particular shapes within a room, certain colour gradient changes and ultimately was able to solve a simple version of Cluedo autonomously.
- **Web Design:** Web design was used in a fairly large project to create a cinema website, where a user could view available movies, purchase a ticket, create an account and receive a QR code ticket. The project was split into the front-end, with my personal focus in this group project being utilised on the Flask framework for Python, creating a strong, security focused **REST API** to correctly process/design the back-end database to store and manipulate data using **SQLite3**.
- Lightly touched on were also areas such as **Encryption** and **User Interface Design**.
- A highly theoretical approach was also taken by the curriculum at the University of Leeds. A lot of thought went into time complexities, algorithm design, optimisation techniques and mathematical functions that can be utilised in day-to-day software engineering problems. (e.g search functions).
- **Dissertation – Procedurally Generation Public House Interiors Using Machine Learning Methods (1st Class):** My dissertation was based on a fairly new area of academic research in the field of Procedural Generation of commercial spaces. The algorithm that was completed at the end of the project was able to create a floor plan in Python, before populating it with rooms in the most suitable layout possible to maximise a series of constraints (such as distance between bathroom and kitchen, etc). What made this project particularly interesting was not necessarily the end product of the floorplan itself,

but rather the vast search space required to be trawled through in the sheer volume of potential room placements within a confined space. As a result, a hybrid method of machine learning algorithms (gradient descent), was combined with more traditional local-maximum discovering functions such as Stochastic Hill Climbing and Simulated Annealing. **GITLAB:** https://gitlab.com/AlexHoare1/individual_project

- Overall a wide variety of programming languages were utilised and a strong knowledge base within them was created with languages such as **Python, Java, Kotlin, C, C++** as well as front-end markup languages such as **HTML, CSS and JavaScript**.
- Software Engineering work methodologies were also studied, with emphasis mostly placed on the **Agile** methodology, but with **SCRUM** and **Waterfall** also touched upon.

2010 to 2015 – Alleyn’s School (London)

A-Levels: Computer Sciences – A, Politics – A, MEI Mathematics – B

June 2015

GCSEs: 10 subjects A* - B

June 2013

Employment

Software Developer

June 2017 – July 2017

Bought by Many (London, UK)

Developed software used to automatically create viewable policy wordings dynamically for a data-driven, group-focused insurance FinTech startup. The program involved SQL database usage, HTML skills and Python during development.

Catastrophe Management Assistant

March 2017 – April 2017

Munich Re Syndicate (London, UK)

Maintained and updated software I created during a previous tenure at Munich Re Syndicate. My roles were to continue the aggregation for the terrorism team whilst adding new features and optimizing the software.

Catastrophe Management Assistant

December 2016 – January 2017

Munich Re Syndicate (London, UK)

Added automation to the Aggregation Process, which previously required seven/eight full-time temps. The program was written in VBA and made use of the SQL databases that stored policy data as well as requesting co-ordinate data automatically from the Google Places Web API.

Aggregation Assistant

April 2016 – July 2016

Munich Re Syndicate (London, UK)

Analysing data from terrorist risks around the globe and converting the addresses into co-ordinates to be plotted in risk analysis software.

Energy Broking Assistant

September 2015 – February 2016

Lockton Companies (London, UK)

Supported the Energy Broking team in producing endorsements and slips, creating and editing policy wordings, creating and maintaining account reports and revenue databases as well as looking after visiting client

Personal Projects

- “CivSim (in space)” – a python based game using ASCII graphics with libtcod which allowed for users to play as a captain of a starship, navigating through an infinitely expandable, procedurally generated universe with randomly generated planets, systems, factions and people to trawl through, with planned features to include diplomacy, large-scale combat and randomly generated quests/missions.
 - <https://gitlab.com/minaman/CivSimInSpace>
- CivSim 2.0 – a C++ reboot of CivSim that deals with the poor commit messages, slow run-times and weak graphical library by importing a new graphical library (SDL2), a custom-build 2D graphics engine, proper documentation and planning, allowing a user to watch a simulation similar to the original CivSim.
 - <https://gitlab.com/minaman/CivSim2>
- “CivSim” – a python based project that allowed a user to tweak variables and parameters before running a simulation of a tribal/primitive civilisation. Based on ASCII graphics using the libtcod library, emphasis was allowed to be placed on mathematical models mostly using the Law of Large numbers to predict and simulate how a small civilisation would develop based on its surroundings.
 - <https://gitlab.com/minaman/CivSim>
- Lead developer in two major video game server developments, managing and developing for the LUA/interface team, which involved the creation of mods and addons for the community, as well as managing a TrinityCore server.

Skills

- Knowledge of programming languages (**C/C++**, **LUA**, **VBA**, **Python**, **Java**, **Kotlin**)
- Intermediate knowledge in web design and markup languages (HTML, JavaScript, CSS)
- Advanced knowledge of Microsoft Word, Excel and Outlook
- Excellent written/verbal communication skills
- Strong problem-solving skills

Achievements

- Winner of Alleyn’s School **Academic Colours for Computer Science** in 2015.
- Runner-up of Alleyn’s School **Academic Colours for Computer Science** in 2014.
- Awarded School Community Colours for running **Computer Science** Society.
- Captain of the 7th, 6th and 5th XI in successive years for Alleyn’s School Football

Interests

- **Travel and Business**
 - I have a strong interest in travelling. During my Gap Year I spent 2 months in Japan, China, Taiwan and South Korea.
 - Regular reader of technology, business and global news.
- **Volunteering**
 - During my time at University, as well as before/after I was actively involved in tutoring Python to people looking to get into the world of Computer Science.

- Whilst at school I was a member of the Fun Fizz initiative, helping disabled children and the elderly in the local community.
- **Language**
 - English (Native speaker)
- **Sport**
 - I am a keen football fan and represented my school in senior football.